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ABSTRACT

During the 1996-97 academic year, a Principles of Management course was taught at Eastern Oregon State College to an on-campus group of juniors, using multiple technologies. The Internet was used as a source for print materials, resources, and research sites, and as a primary information dissemination medium. Electronic mail and listservs were utilized to establish, develop, and maintain asynchronous conferences and conferencing discussion of course materials. The course was designed to utilize the strengths of a number of media while avoiding their accompanying weaknesses. This paper begins with a review of the potential of computer conferencing. The course design is described in the second section, including organization of Internet materials, use of e-mail for conversation, use of listservs for group discussion, student portfolios, and grading. Student reaction to the course is discussed in the next section, focusing on results of a student survey that assessed effort required, communication with peers, class participation, the class environment, the technology, and the level of learning. The fourth section addresses instructor reaction to the course, including level of effort required, communications, and level of interaction. (MES)

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The Lecture Really IS Dead: Using Electronic Media to Teach On-Campus Courses

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ED 430 525

- Abstract
- Introduction
- The Technology
- The Course Design
- The Students
- Student Reaction to the Course
- Instructor Reaction to the Course
- Conclusions
- Bibliography

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Abstract

During academic year 1996-97, BA 321-- Principles of Management is being taught to an on campus group of juniors using multiple technologies. The internet is used as a source for print materials, resources and research sites, and as a primary information dissemination medium. Electronic mail and listservs are utilized to establish, develop, and maintain asynchronous conferences and conferencing discussion of course materials during the quarter. The course is designed to utilize the strengths of a number of media while avoiding their accompanying weaknesses. This paper will involve a description of the academic design of the course, a review of the capabilities of each media, and the actual experiences of teaching the course.

Introduction

The advent of new telecommunications technologies has created interesting opportunities for higher education instructors to rethink the fundamentals of their craft. The traditional forms of information and class delivery, the lecture and structured class discussion, have been tied to the classroom. Students and instructors gathered together to share meaningful experiences, debate, and information transfer. With the development of asynchronous computer conferencing, electronic mail, and the internet, it has become possible to recreate many of the activities of the traditional classroom without requiring the gathering of those involved to a specific place and time.

At Eastern Oregon State College, an emphasis has been placed on the development of appropriate instructional technology that will be cost effective and efficient in terms of instructor time. Our student body has been increasing and, with the rest of the State System of Higher Education, our budgets have been declining. The need for developing models of instruction that might be used for campus and/or off-campus distance delivery has been emphasized. The faculty of the college have utilized a number of media over the past seven years to deliver courses including interactive television, asynchronous computer conferencing, and more recently, the internet. Our efforts have been focused, up to this time, on distance delivery of coursework through technology. This paper deals with an effort to deliver an on-campus course through technology alone.

The Technology

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Eastern's experiences with technology have indicated that particular technologies have strengths and weaknesses when applied to instruction of college students. Asynchronous computer conferencing has been found to be especially effective. Our experience parallels much of the literature. A brief review will provide a sense of the potential of the medium.

Computer conferencing provides meeting locations that have no physical or temporal boundaries; it is a 'virtual space' (Bissel, Coombs, Medredeff, & Rogers, 1987). It allows script communication that takes place over a set period of time instead of the immediate form that is customary in a live classroom. This type of interaction is termed 'asynchronous' to reflect its intermittent nature. Since all interaction is by text and is facilitated through a computer, the entire text of the conversation or class can be saved for future evaluation. It is possible to have a 'transcript' of a course upon its completion that records all communication that occurred in the course (Bissel et al., 1987).

Computer conferencing offers several advantages over traditional educational practice. Perhaps the most important is that it provides a medium for asynchronous communication between the students and instructor that is readily available at any time, facilitating more interaction among all class members--students, instructors, or any other individuals involved in class activities (Bissel et al, 1987; Harasim, 1987; Mason, 1987).

Class members can participate in group projects, collaboration, peer learning, extensive class discussion, and other forms of peer interaction (Harasim, 1987; Mason, 1987). Mason (1987) says that computer conferencing encourages greater independence and self-reliance in learners, demands expression and critical evaluation of learners' opinions by all class members, and facilitates the idea that education is more than the passing of information from teacher to student. Mason also reports that a study conducted at the University of the District of Columbia found that both students and instructors preferred they type of group learning fostered by computer conferencing over conventional instructional methods in terms of effectiveness, skill development, and enjoyment. Davie (1987) found that graduate students perceived that the intensity and quality of on-line interaction were superior to the interaction of the traditional classroom and that student performance in the computer-conferencing class was higher than in the traditional classroom. Through frequent communication and interaction students develop a cooperative atmosphere characterized by democratic principles and mutual support (Harasim, 1987).

Computer conferencing provides a classroom that is open 24 hours a day, 7 days a week. Students can work around their schedules and have more control over their interaction in the course (Davie, 1987; Harasim, 1987). This individuality is enhanced by the ability of the system to adapt to personalized instruction and tutoring.

Computer conferencing also provides a number of advantages for the instructor. Electronic mail provides an alternative to conventional office hours. A student can 'speak' to the instructor at any time and will receive a response. Courses may be designed in which students submit all assignments by electronic mail and, conversely, instructors disseminate all assignments by the same medium, eliminating the need for making, collating, and distributing copies of materials for students. These powerful components of the computer conferencing classroom depend on the efficient and skilled use of the technology by the instructor and the student.

Most of the literature on computer conferencing deals with course delivery at a distance and a comparison with traditional distance education methods. Some of the literature, however, deals with the traditional classroom and some of the faculty at Eastern were curious about the effectiveness of the computer conferencing model in an on-campus environment (Davie, 1987). A course was developed that was delivered in 1994 using the model to on and off-campus students simultaneously. The course was a senior business seminar and included 12 students. The course was generally successful but difficulties in providing formatted text materials to all members of the class was a serious problem. The development of the internet and an intranet on the Eastern campus provided the opportunity for testing another model that utilized this new and powerful medium. Given the well known problems with interaction in traditional, lecture based , instructor centered on-campus courses, an experimental course was developed that would be delivered to on-campus students alone.

The Course Design

The course chosen for this project was BA 321, Principles of Management, 5 credits. Principles of Management is a required course in the upper division core of the Business Economics program at Eastern. Its content includes individual and group processes in organizations, organizational processes, organizational design, leadership, and change. The course is normally taught in a very interactive manner in a traditional classroom with five hours per week of instructor contact. One section of the course is offered each quarter to meet the demands of the Business/Economics program.

As a course delivered via technology, the class was designed to utilize the strengths of computer conferencing and the internet to provide essentially the same level of information and activity as would normally be seen in a campus lecture based course. The internet would be used for dissemination of print and graphic materials that include the course syllabus, assignment sheets, class notes, and resource and research materials. It was also used as a presentation medium by one student group. Electronic mail and a set of six listservs were used to establish a computer conferencing system used for group discussion, class discussion, and private mail between members of the class. All activities of the class, except testing, were done electronically. Each student had e-mail and internet access from computers on campus or from their own computers off campus.

The internet materials were organized in a website housed on the campus server. Website materials included: the course syllabus, weekly assignment schedules, text chapter notes from the instructor, a set of internet links for enrichment and resource sites, and instructor developed support materials on case analysis-testing-study strategies. The ease of availability of the materials to the students was a real strength of this use of the internet. Ease of making changes was also appreciated by the instructor.

All students on the campus have e-mail and internet accounts. E-mail was utilized for conversation between individual students and the instructor and between students. Six listservs were created to facilitate group discussion. Two included the entire class with one utilized for general class discussion and the other for announcements from the instructor.

The class was divided into four groups with each having their own listserv for group discussion. Each group had specific discussion assignments each week that might include case analysis, discussion questions, response to other group's input, and general opinion on class issues. In addition, each student was 'prompted' for individual participation at least once a week. The groups were also responsible for a major term project that would be presented during final week.

Each student was responsible for the preparation of 'personal portfolio' of work that would be turned in prior to each exam. The portfolio included behavioral exercises included in the text, abstracts of internet articles, individual contributions to group discussions, discussion case notes, and one formal paper for each of the five units of the course. Students were expected to participate in group and class activities with participation a major factor in the term grade for the course. Exams were administered in a live setting every two weeks with portfolios turned in prior to the exam.

Grades in the course were based on the number of points earned during in the quarter. Five units were included in course with a an exam (100 pts), a personal portfolio (20 pts), and a case analysis (50 pts) making up the unit portfolio. 100 points could be earned by individual participation in the course. The group term project was an additional 100 points. A total of 1050 points was possible with grades being assigned on a 90%, 80%, 70%, 60% scale.

The Students

The class was composed of 27 students with 1 sophomore, 20 juniors, and 6 seniors. The majority (23) were Business/Economics majors while the remainder were from various other disciplines. Twelve students were female, the remainder male. Twenty five of the students were of traditional undergraduate age with two being in their 30s.

Student Reaction to the Course

Initial student reaction to the structure of the course was not difficult to predict. The students did not know the structure of the course until the first day of class--and it would be accurate to say that they were somewhat surprised. Once the structure of the course was explained and they were trained in the use of e-mail and the internet, they proceeded with something of a sense of adventure. In the second week, this turned to anxiety as they had to cope with the new communication format. Twelve of the group were familiar with both technologies and three were assigned to each of the groups to spread the expertise around the class. This reduced the technology anxiety to as low a level as possible. By the fourth week, the students were all sufficiently proficient to fully participate in the course with the technology being essentially transparent. This is not to say that they liked it, but they became comfortable with it.

A survey instrument was applied during final week after the course was completed. The questionnaire was composed of 43 very specific questions that asked about student reactions to the class as compared to a `traditional lecture course' and the technology used . The students were queried about the level of their effort in the class, their level of interaction with their peers and the instructor, the level of their interaction, the role of group activity, and their reactions to the technology.

Effort required of student 95%--a higher level of work
83%--an equal or higher level of writing
74%--an equal or higher level of group work
91%--an equal or higher level of individual work

Communication 70%--equal or higher task communication with peers
48%--equal or higher social communication with peers
30%--equal or higher task communication with professor
13%--equal or higher social communication with professor
13%--equal or higher knowledge of professor
83%--equal or higher quantity of writing
83%--equal or higher formality of writing

Level of Interaction 61%--equal or higher level of class participation (individual)
52%--equal or higher quality of class discussion (individual)
39%--equal or higher quantity of class discussion (overall)
74%--equal or higher level of group activity (overall)
74%--equal or higher importance of group task activity
70%--equal or higher importance of group social activity

The Class Environment 35%--equal or higher level of class energy
22%--equal or higher level of personality of class
61%--equal or higher level of democracy in class
13%--equal of higher level of convenience of class

Part II. Percentages indicate those who indicated neutral, agree, or strongly agree

The Technology--E-Mail 78%--class materials more available
65%--E-mail works to talk to instructor about class issues
69%--like to use E-mail to talk to other students
65%--like to use E-mail for class discussion
69%--prefer E-mail to phone for talking with instructor
26%--think E-mail class discussion are more interesting than live 87%--think E-mail is good for posting class announcements
78%--like E-mail and use it regularly

The Technology--Internet 83%--see the class web page as a useful tool
83%--posting the syllabus and class schedules helped them in the class

61%--internet articles and class materials on the internet were convenient
74%--using the internet as a research tool helped them in the class
83%--think what they learned about the internet was important
74%--use the internet regularly
48%--found use of the internet confusing
65%--use of the internet enriched the class
70%--accessed all the materials on the class web page

Most important--did they learn more?????????

39%--an equal or higher level of learning

The student's perception of their learning appears to indicate that they saw the technology based format as being less effective than a traditional lecture based course. Other methods of evaluation are, of course, available to compare to the student impressions. The grading system for the course gave great importance to testing of course material. The tests used were composed of 100 randomly generated questions created by the test generator provided by the textbook publisher.

This is in contrast to my `normal' tests that emphasize material discussed in class. The tests in this course were the most difficult I have ever utilized. In addition, the cases studied in the course utilized a methodology that was detailed in the text and was required to be followed by the students. Fully 70% of the course grade was based on individual understanding of course materials and procedures. With this very heavy emphasis on comprehension of the course materials, the course was much more individually based than management courses I have taught in the past. Having taught management courses for fifteen years, I have come to expect the usual normal curve in my grading with a slight skew toward the upper end of the grading scale since these students are juniors and seniors and will tend to have good study habits. In a class of 27 students I would normally expect to see 3-4 A's, 7-10 B's, 10-13 C's, 3-5 D's,. and a few F's or withdraws. I have not kept statistical records of my grades, but I feel that this estimate is accurate.

In this class, two students earned A's, seven earned B's, and 18 earned a grade of C. I was somewhat stunned by this. The grades were based on clean percentiles--(90%--80%--70%--60%) with no curve. My preliminary conclusion, for this group at least, is that they appear to have performed better on exams than I am accustomed to.

Instructor Reaction to the Course

New instructional methodologies impact both the student and the instructor. As with the discussion of student issues, instructor issues of effort, communication, interaction, and class environment must be addressed.

Level of effort required to teach the course.

The instructor role in a course of this type is fundamentally different than a traditional lecture based course. The literature on asynchronous computer conferencing speaks to the role of the professor as a facilitator of learning instead of being a central source of knowledge and understanding. The facilitator role is the model used in this course.

All of the web based materials, with the exception of the selection of some web sites, should be completed prior to the beginning of the course. This included the syllabus, text chapter instructor notes, guidance notes on cases, tests, and other assignments. The weekly schedules were developed, initially, as the course progressed. The students complained however, and by the end of the fourth week, all materials were up on the page. The weekly schedules included all group activity for the quarter. Tests also had to be prepared in advance to determine if they were `reasonable' and covered the material in a comprehensive manner. The only portion of the course that was generated on a weekly basis were the discussion questions assigned to individual students. So, there was considerable up-front preparation and course planning.

During each week of the course, extensive listserv and e-mail discussion took place in the listservs and on an individual basis between students and myself. Each morning, and I mean each morning of the week, all seven days, I received from ten to 50 messages from students in the class. A `normal' morning would include two to three hours handling class discussion over the e-mail system. These messages would include responding to assigned group or individual contributions to the discussion listservs, to assigning new questions to individuals or groups, to commentary and short lecturettes to the entire group. The interactive guts of the class were on the listservs and it was very time consuming to direct and support these discussions. I found that logging in from home was the best method and the best time was from five to eight in the morning. Keeping track of all discussions and individual and group participation was difficult because we did not utilize a true asynchronous conferencing system. The listservs worked, but a true conferencing system would have been much better organized and easier to use. Grading time was essentially the same as for a traditional course.

Overall, the technology based format takes essentially the same amount of time as a traditional class. The time is spent in different types of activity with much more individual and group based interaction and much less time spent in transmission of course material. The time structure of instructor participation is, however, in the control of the instructor. Twenty four hours a day are available for instructor interaction and direction instead of relying only on contact time in the classroom. Multiple instructional sites are available also as long as access to the server is possible.

During late fall term, winter weather created severe problems for the instructor in simply getting to campus. If the class had been held at a specific place and time, classes would have been canceled for two days. One disadvantage however, is that a tendency exists to want to participate each day--leaving no breaks in the class over the quarter. Students mentioned this as a problems and the same may be true for some instructors. It is nice to have a day off from the class-but if one is taken, e-mail would pile up.

Communications

Communication was both easier and more difficult with the technology format. The loss of the richest medium of exchange, speaking face to face, was a problem. The students indicated that this was the great weakness of the course. The presence of e-mail was appreciated and was used by the students once they became accustomed to it. E-mail traffic attained a very high level. A number of students indicated a `loss' from the course in that they did not get the opportunity to simply sit and listen to the discourse in class. Their responses on the survey instrument indicated that they did not get to know the instructor well--and they tended to value this relationship. Eastern is a small college and students are accustomed to getting to know their professors very well on a personal level. This was more difficult with the technology format. The e-mail system was very efficient and facilitated task oriented communications fairly well--but did not do as well on the social level.

Some students established a pattern visiting the instructor's office regularly for `consultation' about the course. These tended to be the better students and they repeated a pattern that is normal for this type of student whether the class is traditional or electronic.

Level of Interaction

Interaction with students in the class was higher than that in a `traditional' lecture class in that the interaction was much broader. There is a tendency in traditional classes for the professor to interact with a subset of the class that is more interested and `quicker'. The process is not very democratic in that the majority of the class, for whatever reason, tend to not actively participate. In this format, it is possible to elicit regular and quality participation with individual students without placing them at risk of embarrassment. They have time to prepare their response and the quality level of that response tends to be higher than an in-class response. The interaction level in the class tended to reinforce the idea that asynchronous interaction tends to generate more thoughtful responses from students. group responses were of an especially high quality from the groups who met to consider their responses to instructor questions. The greatest weakness of this experience was the lack of spontaneous interaction. Students did not tend to interact with each other about class materials without prompting from the professor.

When prompted, they tended to do respond thoughtfully and with some depth.

Conclusions

Generally, the students found the use of e-mail and the internet to be interesting and contributed to the quality of the course. They indicated they interacted with course material and with their groups more frequently and at a higher level than they would have in a traditional lecture course. The group work was seen as being important for both task and social reasons. They also indicated that their level of effort in the course was at a higher level both in effort and quality.

The students found the course environment to less energetic and with less personality that a traditional course. They did appreciate the level democracy in the class however. They interacted less with individuals in the course, especially the professor. They strongly indicated that their interaction with the professor on task and social issues was much less than in a traditional course.

They generally appreciated the use of e-mail as a communication medium except for class discussion. It is difficult to provide a precise explanation for this but it appears to be associated with the lack of spontaneous discussion. They generally found the use of the internet to be positive.

The students did not feel they learned as much as they would have in a traditional course though their test scores tended to disagree with this impression. Their impression appears to result from the lack of the `live' interaction they are accustomed to.

For the professor, expect essentially the same or a higher level of effort that is required for a traditional on-campus course. The up-front preparation is much greater, requiring more precise planning to compensate for the `normal' spontaneous evolution of the course in a classroom. The replacement of live interaction with electronic communication appears to create some barriers to individual student participation--at least when that interaction is about theoretical text based material-though this might not be as unusual as it might seem as this type of interaction can be limited in a traditional course also. The pattern of instructor participation in the course is different that a traditional course. All attempts to stimulate `spontaneous' discussion of the text material failed--with the exception of when specific students were asked about personal experiences that might demonstrate a particular concept. The other students tended to react to these responses. They responded will to inquiries of this type. The very successful students in the class tended to have high test scores, good writing skills, and high participation levels. The lower performing students had generally lower to much lower group participation levels though their test and writing scores varied greatly.

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